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bear in mind : 1st, the more rapidly plants are dried, the better they will retain their colors ; 2nd, the first two days that plants are in the press are of more importance than all the subsequent time.

Two or even three changes of the driers during the first 24 hours will accomplish more than a dozen changes after the lapse of several days. The most perfect preservation of the beautiful colors of some orchids which I have ever seen, was effected by heating the driers and changing them every two hours during the first day.

For less delicate specimens, two changes the first day, one change a day for three or four days after, and subsequent changes at gradually increasing intervals, will suffice. It is often difficult to tell whether a plant is thoroughly dried or not. This may sometimes be ascertained by pressing it for a moment against the cheek. If the cheek feels cold on its removal, the plant is still moist.

Other methods of drying plants are sometimes employed, but are less convenient or less adapted to a large number of specimens.

One is to place the plants and driers between sheets of wire gauze protected on the edge with a rim of stout iron wire, and hang the whole in the sun and wind, without any subsequent change. Only a small package of plants can be dried in this way.

Another is to abstract the chief part of the moisture of the plants at the outset, by placing them in some convenient vessel, and sprinkling or sifting dry and warm sand over them ; at the end of a day or so, they are to be removed from the sand and put in the press.

I had nearly forgotten one point of the first importance : do not neglect, at the earliest opportunity, to insert in each sheet a label bearing the name of the plant, if already made out, but, at all events, the place and date of collection, together with notes of the locality in which it was found. This is often left, to the subsequent sorrow of the botanist, until these particulars have escaped the memory, and half the value of the specimen has consequently been lost.

F. J. B.

74. *Spirodela polyrrhiza*.—Prof. Hegelmayer of Tübingen has just given us in the *Botanische Zeitung* of Sept. 22 & 29, 1871, a most interesting addition to the very thorough monograph of Lemnaceæ, published by him three years ago, by his account of the organs of fructification of *Spirodela polyrrhiza* from the specimens received from Mr. Leggett, and has illustrated it thoroughly by numerous figures.

He premises it by stating that, according to his present lights, he must consider the organs of the flowering Lemnæ as constituting single hermaphrodite flowers, consisting of a pistil and two lower stamens, the third upper one being regularly abortive, and subtended by a bract (what was called the spathe.)

He then minutely reviews the flowering organs of our *Spirodela*, which are in the bud surrounded and enveloped by the membranous bract, bearing crystal and pigment cells, and which opens by a small apical slit. The second or posterior stamen often

remains undeveloped. The anther cells are arranged not above one another as in other *Lemnæ*, but behind one another or obliquely lateral, as had been stated before. The filaments show spiral vessels, especially visible in the connective.

The ovules he finds single or in twos, (in the Detroit plant they were always in twos.

He then gives a minute account of the structure of the ovules and of the horizontal seed. The seeds are single, in one specimen only he found two immature but regularly developed seeds. In all the specimens examined they were covered with epidermis, and therefore smooth; but he supposes that in a later stage the epidermis disappears and then the seed might have a ribbed appearance, much like the other *Lemnæ* in which the epidermis is more easily destroyed and thus the peculiar surface markings brought to light. The endosperm is thicker than in other *Lemnæ*—there is also a difference in the slit of the embryo.

In a systematic point of view the structure of the anthers would fortify the genus *Spirodela*, which altogether proves to be the most highly developed of all *Lemnaceæ*, if the second species of the genus, *Spirodela oligorrhiza*, should exhibit the same character; but the flowers of this are to him unknown.

The number of ovules proves of little importance as a generic character. Not only that here one as well as two occur—he has now also become acquainted with a form from different parts of Australia, which, in most respects very similar to *Lemna minor*, shows regularly two ovules, and which on that account he had formerly thought to be allied to *L. gibba*, but which he now is inclined to consider distinct from both *L. minor* and *L. gibba*, and names *L. disperma*. G. E.

75. *Arcenthobium*.—We have received further particulars about this interesting discovery. Mrs. Millington writes, Nov. 23: "It seems curious that the plant I found should be so nearly the one I set out to find last April when I first saw the Nevada parasite. It occurred to me then that something of that kind might cause the unhealthy look and the decay of the Black Spruce, so well-known among the Adirondacks. Almost the first *Abies* that I had an opportunity to examine was literally covered with that curious growth, then quite small and without fruit. Some botanist, who has an opportunity to examine the *Abies balsamea*, might possibly find it infested with the same parasite. Many trees present the same appearance as the *A. nigra* when the parasite is present." Again, in a letter dated Dec. 12th, she writes: "I received a very interesting letter from Dr. Engelmann, and, to secure some winter specimens that we might study its habits more at large, I went myself to Warrensburg. I got specimens from twenty different trees, large and small. About 75 per cent of all the spruces were infested. Groups of large trees forty feet high were dead, and bore the peculiar marks of the parasite. Nothing but the depth of the snow (twelve inches) prevented my looking farther among the *A. balsameæ*, where I expect to find it yet. The location is on the east side of the plank road, two miles and a half from Warrensburg village, and half a